U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Admin.
NATIONAL OCEAN SERVICE
Damage Assessment Center
Florida Keys National Marine Sanctuary

DATE: 10/17/01

TO: Sharon Shutler and Martin Hindel, NOAA General Counsel
Maureen Malvern and Jerome Johnson, Florida DEP Office of General Counsel

FROM: Kevin Kirsch and Sean Meehan, NOAA Damage Assessment Center, Florida Keys National Marine Sanctuary

SUBJECT: ***I Sight Too*** vessel grounding assessment report

FFWCC INCIDENT (CASE) #: 01-3A-12715

FFWCC CITATION: 011179B

NAME & DESCRIPTION OF VESSEL: *I Sight Too*, 50.5 foot Chris Craft cabin cruiser

VESSEL OPERATOR: Kevin Cecil Greenidge

DATE AND TIME OF INCIDENT: 8/19/01 @ 0900 hrs

LOCATION OF INJURY: John Sawyer Bank (Marathon, FL; State of FL waters)

LAT/LONG POSITION: N 024^{o} 45.4922' W 081^{o} 06..4328' (blowhole)
N 024^{o} 45.4913' W 081^{o} 06.4301' (berm)
N 024^{o} 45.4865' W 081^{o} 06.4270' (propscar)

TOTAL AREA IMPACTED:

33.38 m^2 seagrass bottom cover excavated
18.77 m^2 seagrass bottom cover buried
52.15 m^2 seagrass bottom cover impacted (predominately *Thalassia testudinum*)

PHOTO/VIDEO DOCUMENTATION:

Underwater digital video

DISCUSSION: On 08/28/01 Kevin Kirsch and Sean Meehan initiated an injury assessment of the grounding site of the 50.5' Chris Craft cabin cruiser *I Sight Too* (see Figures 1). This grounding occurred on John Sawyer Bank north of Marathon, FL (See NOAA Chart # 11449). GPS Lat/Long coordinates were taken at several points within the injury.

METHODOLOGIES

Utilizing differentially corrected, surveying-grade DGPS equipment (Trimble® Pro XR with a TSC1 Datalogger), the grounding site was mapped by physically tracing the outlines of the various injury features. The coordinates generated by the tracing work were downloaded to GPS Pathfinder® Office data processing software version 2.70 (Trimble) and then to Arcview® GIS version 3.2a (ESRI), which is used to arrive at square meter area calculations for the injury features. Depth measurements were made using a graduated staff supporting the Trimble antenna. This information is then processed using Arcview® GIS version 3.2a with the 3D Analyst Extension resulting in a 3 dimensional view of the area. Measurements were made using the water surface as the level plane.

Community composition, percent cover and density of the benthic community, both in the injured area and in the surrounding undisturbed area, were assessed using a modified Braun-Blanquet technique (Kenworthy and Schwarzchild, 1997; Braun-Blanquet, 1932). This method involves placement of a $0.25m^2$ quadrat on the substrate and visually inspecting the content of the quadrat. The submerged aquatic vegetation (seagrass and macroalgae) and/or coral are identified and assigned a cover-abundance scale value. The scale values are: 0.0 = not present, 0.1=solitary specimen, 0.5=few with small cover, 1=numerous but less than 5% cover, 2=5-25% cover, 3=25-50% cover, 4=50-75% cover, and 5=75-100% cover. In order to determine the percent cover per individual species, as well as the total seagrass cover, the Braun-Blanquet scores by species and total cover are averaged over all of the quadrats assessed within each feature (injured area, undisturbed area). The point estimates of percentage cover corresponding to these average Braun-Blanquet scores are then calculated using the attached conversion table (see Appendix A). The loss of percent cover of seagrass as a result of the grounding can then be assessed by comparing the percent cover of the injured area to that of the undisturbed area immediately adjacent to the injury.

DESCRIPTION OF INJURY

This grounding occurred on a seagrass bank characterized as a *Thalassia testudinum* dominated seagrass community. Other living components include sponges and other invertebrates typical of seagrass meadows in this area of the FKNMS, various species of macroalgae, and numerous species of fishes. The sediments consist of cohesive carbonate sands and muds, coral rubble and *Halimeda* algae fragments.

The grounding consisted of two sets of propscars, a blowhole and a berm (see Figure 2). The first set of propscars entered the grassbed at a bearing of 80° (see Table 1). The parallel scars had a length of 7.05 and 5.82 meters with an average width of 0.50 meters and an average depth of 0.10 meters below the surrounding seafloor. This first set of scars intersected with the second set of propscars. The second set of propscars ran northwest at a bearing of 305°. These scars had lengths of 8.72 and 7.27 meters with an average width of 0.75 meters and an average depth of

0.10 meters below the surrounding seafloor. The second set of propscars lead into a U-shaped blowhole with a surface area of 15.36 m^2. The blowhole had a maximum depth of 0.90 meters below the surrounding seafloor. The total volume of sediment excavated from the blowhole and propscars is calculated to be 8.68 m^3. The material ejected from the blowhole created an 18.77-m^2 berm to the northeast of the blowhole. Due to overlap of the propscars, the total area of seagrass injured is not equal to the sum of the individual features. Therefore, the features were merged in Arcview before the total area injured was calculated.

Table 1. Dimensions of propscars.

Scar	Direction	Length (meters)	Width (meters)
North	80°	7.05	0.50
South	80°	5.82	0.50
Northeast	305°	7.27	0.75
Southwest	305°	8.72	0.75

The total area impacted is calculated to be 52.15 m^2 of *seagrass* bottom cover, predominately *Thalassia testudinum* (Turtle grass).

Using the Braun-Blanquet technique, two species of seagrass were noted within the injury caused by the *I Sight Too* (see Table 2). However, neither of these species comprised greater than 1% of the bottom cover. In the surrounding undisturbed areas, three species of seagrass was found (see Table 3). The dominant seagrass in this area is *Thalassia testudinum* (Turtle grass) with an average percent cover of 13.75%.

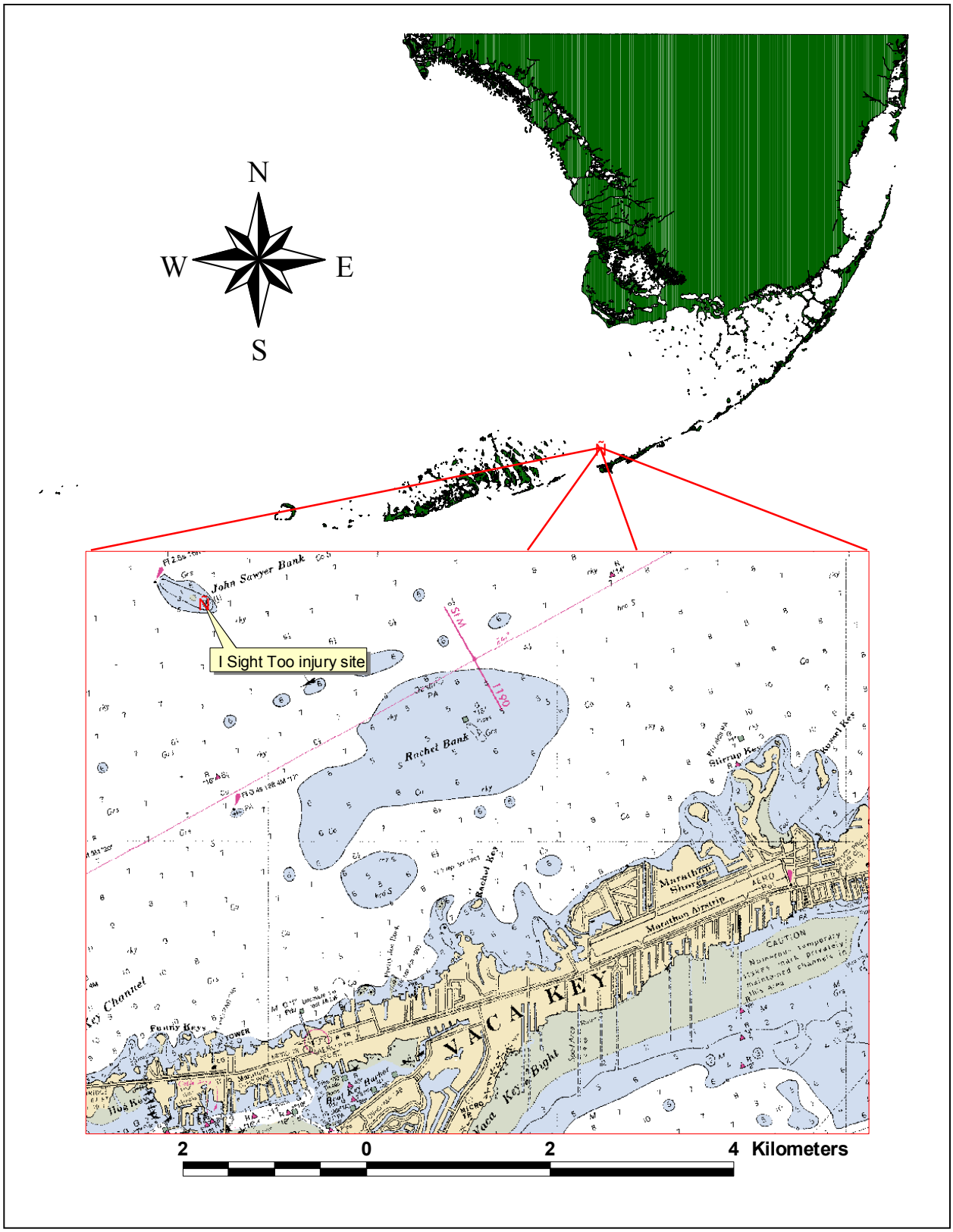

Figure 1. Location of *I Sight Too* injury.

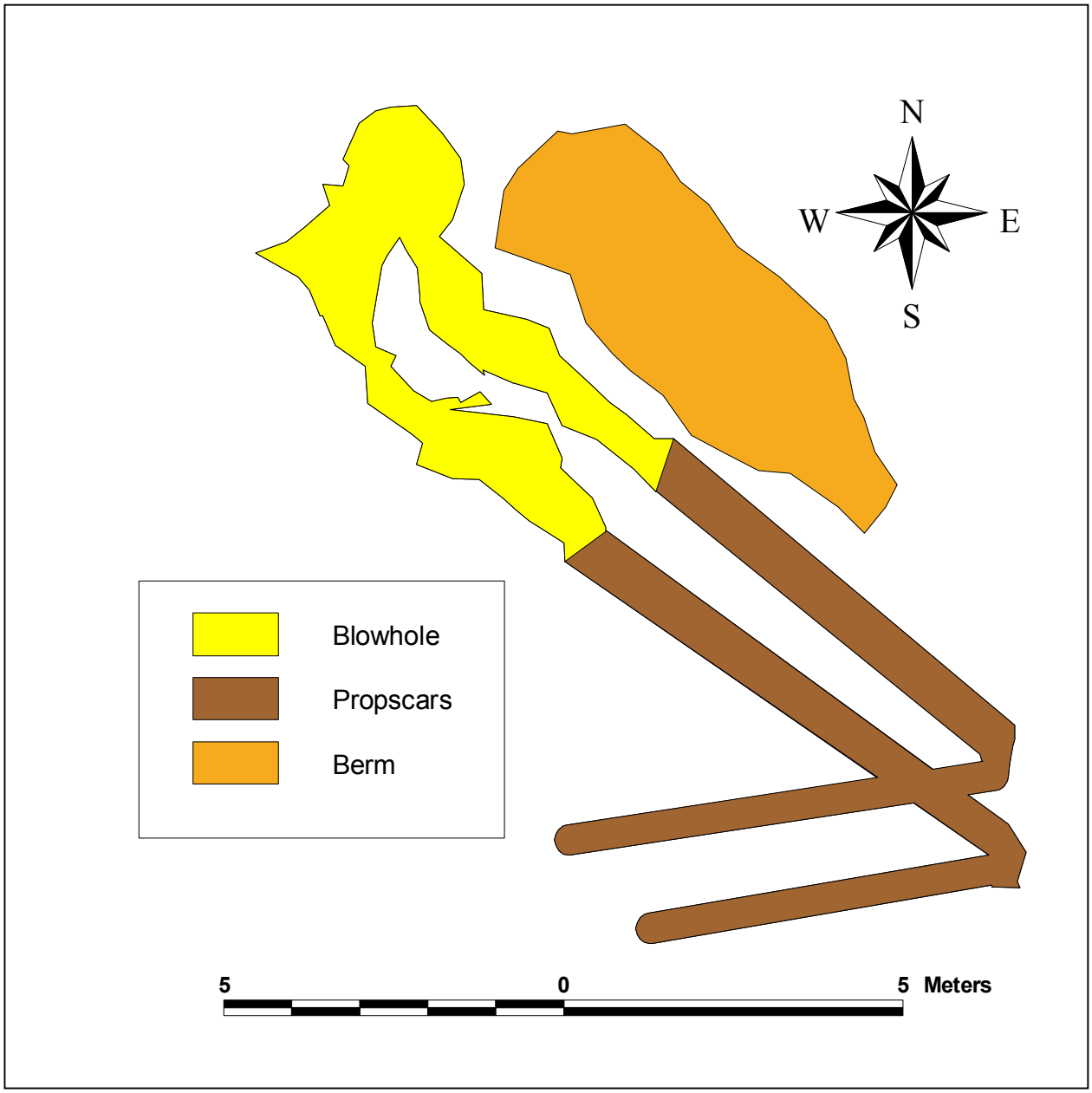

Figure 2. Physical dimensions of the *I Sight Too* injury.

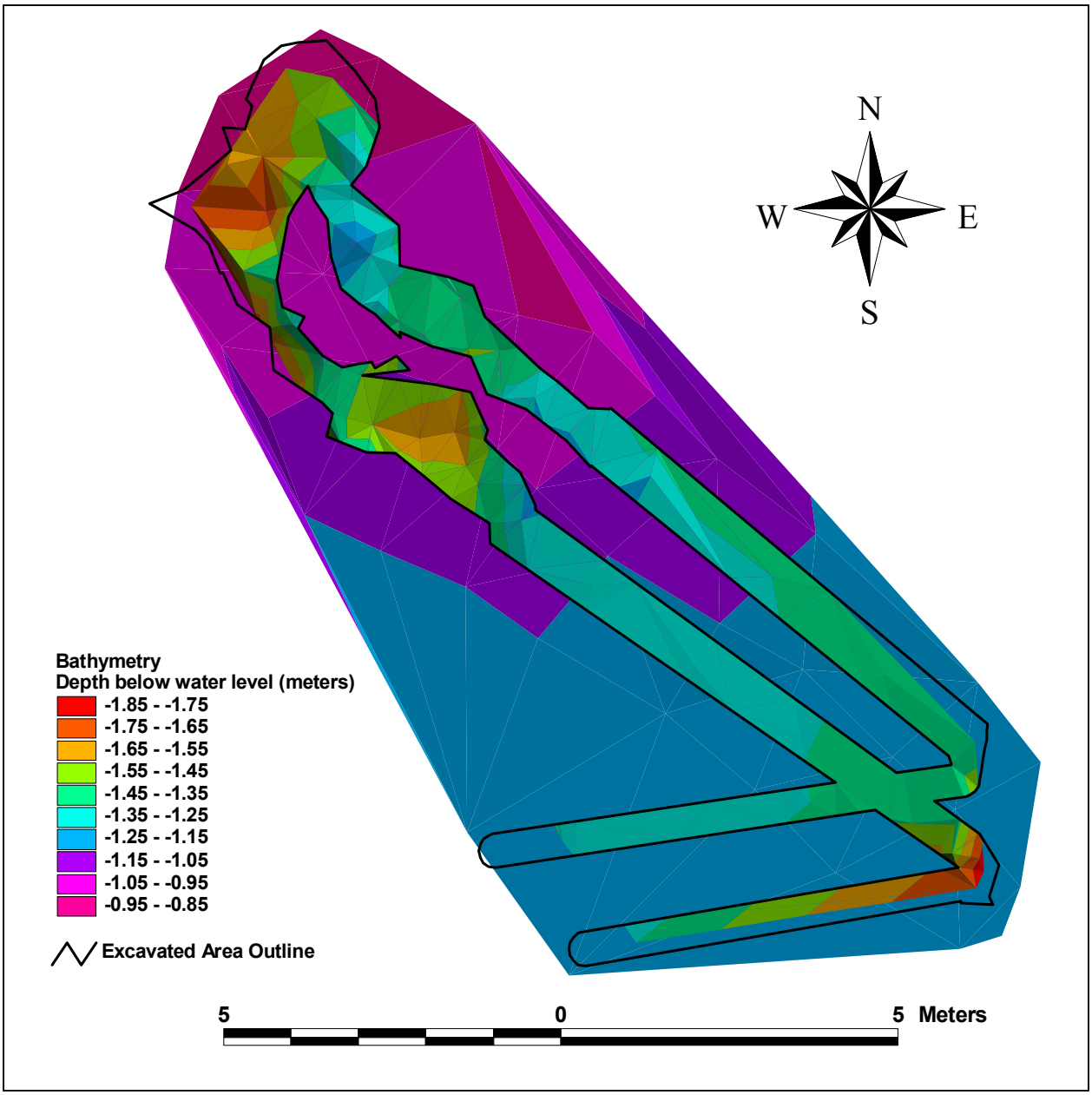

Figure 3. Bathymetry of *I Sight Too* injury site.

Table 2. Summary of Raw Braun-Blanquet Scores (See Braun- Blanquet scores in Appendix B)

	Species	Trench Scar	Berm Scar	Control
Density[1]	*T. testudinum*	0.00	0.67	1.90
	H. wrightii	0.00	0.03	0.05
	S. filiforme	0.00	0.00	0.80

1) Density = D_i = SUM (S_{ij}/n)

D_i = density of species i
j = quadrat number
S_{ij} = BB score for species i in quadrat j
n = total number of quadrats in transect

Table 3. Braun - Blanquet Scores converted into percent cover. (See Conversion Table in Appendix C)

	Species	**Inside Injury**	**Surrounding Habitat**
Percent Cover	*T. testudinum*	1.0%	13.75%
	H. wrightii	1.0%	1.00%
	S. filiforme	0.0%	1.00%
	TOTAL		**15.75%**

REFERENCES

Braun-Blanquet, J. 1932. *Plant Sociology*- the study of plant communities. G.B Fuller and H.S Conrad, Eds. Koeltz Scientific Books. Koenigstein. West Germany.

Kenworthy W.J. and A. Schwarzchild. 1997. Vertical growth and short shoot demography in *Syringodium filiforme* in outer Florida Bay, USA. Marine Ecology Progress Series. vol 173. pp. 25- 37.

Appendix A: *I Sight Too* Braun Blanquet Damage Assessment and Habitat Characterization

Percent Cover and Services Lost

Species	Category	Aboveground percent of total per species in Control Site	Percent Cover in Control Site	Percent Cover Remaining in Trench Scar	Percent of Services Lost in Trench Scar	Percent Cover Remaining in Berm Scar	Percent of Services Lost in Berm Scar
T. testudinum	Density	87.30%	13.75%	0.00%	13.75%	1.00%	12.75%
H. wrightii	Density	6.35%	1.00%	0.00%	1.00%	1.00%	0.00%
S. filiforme	Density	6.35%	1.00%	0.00%	1.00%	0.00%	1.00%
Total		100.00%	**15.75%**				

Average Braun Blanquet Scores

Species	Category	Trench Scar	Berm Scar	Control
T. testudinum	Density	0.00	0.67	1.90
H. wrightii	Density	0.00	0.03	0.05
S. filiforme	Density	0.00	0.00	0.80

Prepared by: **NOAA Damage Assessment Center, Marathon, FL**

Appendix B: *I Sight Too* Blanquet Scores

Quad #	Injury	*T.t.*	*S.f.*	*H.w.*	Total Grass	TMA	Coral	Sed. Type
1	C	1.0	1.0	0.0	2.0	2.0	0.0	S
2	C	2.0	1.0	0.0	2.0	2.0	0.0	S
3	C	3.0	1.0	0.0	3.0	2.0	0.0	S
4	C	2.0	1.0	0.0	2.0	3.0	0.0	S
5	C	2.0	0.5	0.0	2.0	2.0	0.0	S
6	C	2.0	0.0	0.0	2.0	2.0	0.0	S
7	C	2.0	1.0	0.0	3.0	1.0	0.0	S
8	C	2.0	1.0	0.0	3.0	2.0	0.0	S
9	C	2.0	1.0	0.5	3.0	2.0	0.0	S
10	C	1.0	0.5	0.0	1.0	2.0	0.0	S
Average		**1.90**	**0.80**	**0.05**	**2.30**	**2.00**	**0.00**	
11	BH	0.0	0.0	0.0	0.0	0.0	0.0	MS
12	BH	0.0	0.0	0.0	0.0	0.0	0.0	SM/CR
13	BH	0.0	0.0	0.0	0.0	0.0	0.0	MS/HH
Average		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
14	BM	0.5	0.0	0.0	0.0	0.1	0.0	S
15	BM	0.5	0.0	0.0	0.0	0.5	0.0	S
16	BM	1.0	0.0	0.1	0.0	0.1	0.0	S
Average		**0.67**	**0.00**	**0.03**	**0.00**	**0.23**	**0.00**	
17	TR	0.0	0.0	0.0	0.0	0.0	0.0	S
18	TR	0.0	0.0	0.0	0.0	0.0	0.0	S
19	TR	0.0	0.0	0.0	0.0	0.0	0.0	S
20	TR	0.0	0.0	0.0	0.0	0.0	0.0	S
Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	

KEY TO ABBREVIATIONS

Species:
T.t. = Thalassia testudinum
S.f. = Syringodium filiforme
H.w. = Halodule wrightii
TMA = Total Macroalgae

Sediment Types:
M= Mud
MS = Muddy Sand
SM = Sandy Mud
R = Rock
CS = Coarse Shell
HH = Halimeda Hash
CR = Coral Rubble
LC = Live Coral

Injury Regions:
TR = Trench
BH = Blow Hole
BM = Berm
C = Control (Reference)

Appendix C: Braun-Blanquet Score to Percent Cover Conversion Tables

Interpolation of the Mid-Point of BB Scores			
BB Score	% Cover	BB Score	% Cover
0.00	0.00%	2.60	28.50%
0.10	1.00%	2.70	30.75%
0.20	1.00%	2.80	33.00%
0.30	1.00%	2.90	35.25%
0.40	1.00%	3.00	37.50%
0.50	1.00%	3.10	40.00%
0.60	1.00%	3.20	42.50%
0.70	1.00%	3.30	45.00%
0.80	1.00%	3.40	47.50%
0.90	1.00%	3.50	50.00%
1.00	2.50%	3.60	52.50%
1.10	3.75%	3.70	55.00%
1.20	5.00%	3.80	57.50%
1.30	6.25%	3.90	60.00%
1.40	7.50%	4.00	62.50%
1.50	8.75%	4.10	65.00%
1.60	10.00%	4.20	67.50%
1.70	11.25%	4.30	70.00%
1.80	12.50%	4.40	72.50%
1.90	13.75%	4.50	75.00%
2.00	15.00%	4.60	77.50%
2.10	17.25%	4.70	80.00%
2.20	19.50%	4.80	82.50%
2.30	21.75%	4.90	85.00%
2.40	24.00%	5.00	87.50%
2.50	26.25%		

BB Score	Mid-Point Range
<1= <1%	<1= 1%
1=1%-5%	1=2.5%
2= 5%-25%	2=15%
3= 25%-50%	3=37.5%
4= 50%-75%	4=62.5%
5= 75%-100%	5=87.5%